**CODE/MOE/UOIT Makerspaces Project--Lesson Planning Template**

**School Board: Rainy River District School Board**

**Grade(s): 4**

**Subject(s): Mathematics**

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| **BIG IDEAS:****To use the Ozobots to go “Trick-or-Treating” while students measure the distance and time travelled.****Curriculum Expectations:****OVERALL:**estimate, measure, and record length, perimeter, area, mass, capacity, volume, and elapsedtime, using a variety of strategies;**SPECIFIC:** -describe, through investigation, the relationship between various units of length. |
| **Learning Goals:**“We are learning to…”-measure the distance of lines using a ruler or string. | **Success Criteria:** “We will be successful when…”**-**accurately measure the distance of a line. |
| **Lesson Overview:**Students will begin by drawing a neighbourhood with houses, roads, and sidewalks. Students will then create routes that their Ozobots will take “Trick-or-Treating”. Students will measure the distance the Ozobots travelled. |
| **Materials and Technology:** -Ozobots-Paper-Markers-Rulers-String |
| **Student Accommodations/Modifications:** **-Some students may be required to travel to fewer houses.****-Students who do not participate in Halloween can draw a paper route.** | **Lesson will be differentiated by:*** **Content, specifically:**
* **Process, specifically:**
* **Product, specifically:**
* **Environment, specifically:**
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| **MINDS ON: Getting Started** |
| During this phase, the teacher may: • activate students’ prior knowledge; • engage students by posing thought-provoking questions; • gather diagnostic and/or formative assessment data through observation and questioning; • discuss and clarify the task(s).  | During this phase, students may: • participate in discussions; • propose strategies; • question the teacher and their classmates; • make connections to and reflect on prior learning.  |
| **Describe how you will introduce the learning activity to your students.** -The activity will start with a discussion on safe trick or treating practices.-Students will use the Ozobot code on their route.**What key questions will you ask?** -What is the most efficient route?-How can you measure a line that is not straight?-What code can you draw for your Ozobot to make the journey quicker?**How will you gather diagnostic or formative data about the students’ current levels of understanding?**-Videos, observations, accompanying worksheet **How will students be grouped? How will materials be distributed?** -Could be independent, partners, or small group. |
| **ACTION: Working on it** |
| During this phase, the teacher may: • ask probing questions; • clarify misconceptions, as needed, by redirecting students through questioning; • answer students’ questions (but avoid providing a solution to the problem); • observe and assess; • encourage students to represent their thinking concretely and/or pictorially; • encourage students to clarify ideas and to pose questions to other students. | During this phase, students may: • represent their thinking (using numbers, pictures, words, manipulatives, actions, etc.); • participate actively in whole group, small group, or independent settings; • explain their thinking to the teacher and their classmates; • explore and develop strategies and concepts.  |
| **Describe the task(s) in which your students will be engaged.** -Using the Ozobots, designing their neighbourhoods, and measuring routes with rulers will engage learners.**What misconceptions or difficulties do you think they might experience?** -How to get the Ozobot to successfully follow the route and read codes.-How to measure a line that is not straight.**How will they demonstrate their understanding of the concept?**-By describing how to measure the route and accurately doing so.**How will you gather your assessment data (e.g., checklist, anecdotal records)?**-Checklist-Worksheet-Videos**What extension activities will you provide?** -Students could do a paper route to collect money and would need to calculate their total earnings.-Students could measure elapsed time on the route using a stop watch.-Design costumes for the Ozobots to wear.-Could be used as Santa’s route across the globe. |
| **CONSOLIDATION: Reflecting and Connecting** |
| During this phase, the teacher may: • bring students back together to share and analyse strategies; • encourage students to explain a variety of learning strategies; • ask students to defend their procedures and justify their answers; • clarify misunderstandings; • relate strategies and solutions to similar types of problems in order to help students generalize concepts; • summarize the discussion and emphasize key points or concepts.  | During this phase, students may: • share their findings; • use a variety of concrete, pictorial, and numerical representations to demonstrate their understandings; • justify and explain their thinking; • reflect on their learning. |
| **How will you select the individual students or groups of students who are to share their work with the class (i.e., to demonstrate a variety of strategies, to show different types of representations, to illustrate a key concept)?** **-**We will display routes that were successfully coded to learn strategies that will help those who had difficulties. **What key questions will you ask during the debriefing?** -What problems did you have coding the Ozobots?-Are there any changes you would make next time? |